IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Mamoru UCHIDA et al.

Group Art Unit: 1733

Serial Number: 09/627,424

Examiner: MAKI, STEVEN D

Filed: July, 27, 2000

For: STUDLESS TIRE

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
Washington, D.C. 20231

Sir:

Akira Minagoshi residing at 3-6-37, Tarumi-cho, Suita-shi, Osaka, Japan duly deposes and says:

1. That he graduated from Department of Applied Chemistry, Faculty of Engineering, KUMAMOTO UNIVERSITY, Kumamoto, Japan, in the year 1993, and he received the degree of Master of Applied Chemistry from GRADUATE SCHOOL OF KUMAMOTO UNIVERSITY, Kumamoto, Japan in the year 1995;

2. That since 2001, he has been employed in the capacity of Sumitomo rubber Industries, Ltd.;

3. That from 2001 he has been engaged in development for compound in a studless tire used for a compact car (PC, LT).;

4. That he has read and is familiar with the instant application for United States Letters Patent and Office Action thereto mailed January 28, 2003.; and

5. That he has made experiments in order to show that, in

braking performance on ice and abrasion resistance, the studless tire in the present invention is superior to a studless tire which does not meet the elements of the present invention concerning an amount of dispersed fibers, the ratio of a complex elastic modulus E1 in the thickness direction to an elastic modulus E2 in the circumferential direction of the tire, and a sort of the fibers at the same time.

Experiment 1

By using rubber compositions shown in Table 1, a tire in which glass fibers were oriented in the thickness direction of the tread was formed using a method shown in Fig. 2 of the present application. Used raw materials are collectively shown in the present specification (page 7 line 23 to page 8 line 15). In this method, the tread was formed by using a rubber composition blended with glass fibers which was rolled by a calendar roll into a thickness of 1mm and a width of 1.5m, and by repeating folding it.

By using the obtained tire, the evaluations about an average length of staple fibers in a rubber, an aspect ratio of staple fibers, a complex elastic modulus E1, E2, braking performance on ice, and an abrasion resistance were carried out according to the methods in the present specification (page 8 lines 16 to page 9 line 13). The results are shown in Table 1.

Experiment 2

A tire was formed in the same manner as in experiment 1 except for changing the amount of the glass fibers to 5 parts by weight. The evaluations were carried out in the same manner as in experiment 1. The results are shown in Table 1.

Experiment 3

A tire was formed in the same manner as in experiment 2 except for changing the glass fibers to vinylon fibers. The evaluations were carried out in the same manner as in experiment 1. The results are shown in Table 1.

Table 1

	Experiment 1	Experiment 2	Experiment 3
Natural rubber	60	60	60
High-sys Polybutadiene	40	40	40
N220	45	45	45
Silica Nipsil VN3	20	20	20
Paraffin oil	25	25	25
Wax	2	2	2
Antioxidant	1.5	1.5	1.5
Stearic acid	2	2	2
Zinc white	3	3	3
Glass fiber	25	5	-
Vinylon fiber	-	-	5
Silane coupling Agent	1.2	1.2	1.2
Sulfur	1.5	1.5	1.5
Curing Accelerator	1	1	1
Average length of staple fibers in rubber (mm)	0.3	3.0	0.8
Aspect ratio of Staple fibers (length/diameter)	27	272	57
Complex elastic Modulus E1	10.4	17.3	8.7
Complex elastic Modulus E2	4.2	4.1	4.3
E1/E2	2.48	4.22	2.02
Braking Performance on ice	115	92	90
Abrasion Resistance	93	99	96

Result and Discussion

In the experiment 1, the obtained tire meets the elements in Claim 1 about E1/E2 and the sort of the fibers. But the amount of the glass fibers dispersed in the tire is more than 20 parts based on 100

parts by weight of the diene rubber, and the tire does not meet the amount of the dispersed fibers in Claim 1. The tire has a braking performance on ice of 115 and an abrasion resistance of 93.

In the experiment 2, the obtained tire meets the elements in Claim 1 about the amount of dispersed fibers and the sort of the fibers. But E1/E2 of the tire is more than 4, and the tire does not meet E1/E2 in Claim 1. The tire has a braking performance on ice of 92 and an abrasion resistance of 99.

In the experiment 3, the obtained tire meets the elements in present Claim 1 about the amount of dispersed fibers and E1/E2. But vinylon fibers are dispersed instead of glass fiber, and the tire does not meet the sort of the fibers in Claim 1. The tire has a braking performance on ice of 90 and an abrasion resistance of 96.

On the other hand, in Example 1 of the present specification, the obtained tire has a braking performance on ice of 125 and an abrasion resistance of 100. The comparison of these results proves that the studless tire in the present invention is superior to a studless tire which does not meet the elements of Claim 1 about the amount of dispersed fibers, E1/E2, and the sort of the fibers at the same time.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

This 12th day of May, 2003

by Akira Minagoshi

Akira Minagoshi

We, the undersigned witnesses, hereby acknowledge that Akira Minagoshi is personally known to us and did execute the foregoing Declaration in our presence on:

Date: May 12, 2003 Witness Isamu Tsumori

Date: May 12, 2003 Witness Yutaka Sakon